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Title : Variability in foraging tactics and estimated prey intake by socially foraging humpback whales in Chatham Strait, Alaska

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Student : Not Applicable

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Abstract : Among baleen whales, the humpback whales (*Megaptera novaeangliae*) of SE Alaska are unusual in that they form enduring bonds while foraging on Pacific herring (*Clupea harengus pallasii*). Previous studies using both laboratory studies on herring and indirect measurements in the field (e.g. sonar) have suggested that these whales use bubbles and loud vocalizations to concentrate and herd prey to the surface where they can easily be captured. Based on these experiments and observations, a model was developed that suggested that bubble nets would be deployed at 17-m and whales would accelerate up into the bubble net, while flushing prey, at a relatively high speed of 3 m/sec. From 1999-2002 we deployed animal-borne imaging and TDR packages (National Geographic's "Critttercam", via suction cup) on 12 socially foraging whales that foraged in 16 different groups and engaged in 107 bubble netting events. Underwater video observations support many previous results including task specialization within groups and use of vocalizations to manipulate prey behavior. However, a high degree of variability was noted in the manner in which prey are attacked. Some groups maintained speeds of 3.5 m/s, while others would temporarily halt below a fish school (presumably to let the bubble net to be fully completed) prior to the final rush to the surface. Herring schools ensounded by the feeding call were not observed to close ranks as predicted, although they did exhibit a rapid swimming response away from the vocalizing whales. Video data indicated a high degree of variation in estimated prey intake within groups. Overall, the amount of prey consumed per lunge was far less than expected, providing useful insights for estimates of annual rates of prey intake. Future studies combining animal-borne imaging and TDR systems with prey distribution studies will shed additional light on food intake rates and patch leaving decisions.